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The Role of Non-Residents in the Canadian Money Market

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Introduction

The money market is generally defined as that segment of the capital market where various short-term financial instruments are traded. In its capacity as a capital market, this market serves to channel short-term funds from one sector to another, to facilitate conversion of savings into investment, and to permit diversification of portfolios. However, this market is somewhat different from others in that it is very liquid, and the risk attached to the instruments traded is practically nil. In addition, it serves as a major link between the monetary authorities and the financial system, as the policies of these authorities are transmitted via this market in particular. This aspect of the money market will, however, be left aside for purposes of this analysis.

Rather, emphasis will be placed on the fact that the money market is one of the most important locations for trading in debt instruments between Canadian residents and non-residents. Whether non-residents invest through the Canadian money market or vice versa, i.e. residents do so through the foreign market, really only depends on the relative credit conditions which prevail amongst the various national money markets. This fluidity of the market is encouraged by the virtual absence of institutional restrictions, resulting in a market which is strongly integrated with the other national markets.

In this study, the money market is taken to be limited to the Canadian non-banking sector, and encompasses the instruments generally traded by brokers. Study of the historical data reveals that the money market, thus defined, has given rise to net inflows of capital in the past. The situation is not as clear when the definition also includes the chartered banks. The banking sector, which is by far the most important borrower in the Canadian market, has historically invested more funds outside the country than it has borrowed from outside. However, these net outflows were denominated in foreign currency, more specifically in United States dollars. In order to simplify our analysis, however, we will confine ourselves here to the role of non-residents in the *non-banking* Canadian market.

After outlining the importance of non-residents in this market, we shall attempt, in the second section of this paper, to explain the reasons which lead non-residents to invest in Canada. In conclusion, the role of this market as a stabilizing or destabilizing influence on the balance of payments will be discussed briefly.

1. Participation of Non-Residents in the Canadian Money Market

For purposes of this paper, the money market includes Government of Canada Treasury bills held by the non-banking sector, commercial paper (including bankers' acceptances sold to non-residents), finance company paper, bills issued by other levels of government, and bills issued by the Canadian branches of foreign banks.

The net amount outstanding on the Canadian market rose from $1.5 billion at the end of 1963 to $19.3 billion at the end of 1979. The most spectacular increase has occurred over the past ten years, during which it more than quintupled (Table 1). Non-residents played a prime role in this market; they accounted for 23% of the market at the end of 1963, the first year for which these data were kept, and their share fluctuated from a peak of 31% in 1964 to a low of 11% in 1973. At the end of 1979, non-residents held more than $3 billion in Canadian bills, or 17% of the Canadian market. Data on the net holdings of non-residents camouflage the extent of the activity which occurs in this market. Because of the short-term nature of these instruments, there is considerable turnover among residents and non-residents; the volume of transactions rose from less than $2 billion in 1963 to $48 billion in 1979 (Table 2). Depending on the circumstances, these transactions may be very short-term. Thus, under certain conditions, Canadian brokers borrow from the United States in order to finance their inventory for the weekend.

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Secondly, it will be seen that such transactions are made on the basis of a technical arbitrage between "federal funds" and "clearing house funds" and the rates prevailing in Canada.

The Canadian money market is relatively young, its origins dating back only to the mid-fifties when only Government of Canada Treasury bills were traded. Since then, this market has diversified greatly, with non-residents adapting quickly to the new instruments traded (Table 3). As evidence of this, at the end of 1979 non-residents held about 20% of financial intermediaries' and other than Government of Canada instruments, and 17% of Government of Canada bills held by the non-banking sector.

In contrast to other instruments, where United States residents are dominant among non-residents, Government of Canada Treasury bills are generally purchased by third countries (Table 4). Most Treasury bill purchases are made by central banks and by petroleum-producing countries.

With the exception of some entities (particularly finance companies) which borrow abroad directly, non-residents' investment on the Canadian money market is carried out through brokers. Indeed, analysis of the volume of transactions in 1979 reveals that better than one-half of the market with non-residents is dominated by two stockbrokers. This is scarcely surprising, given the very small number (less than 10) of brokers who trade in Canadian securities with non-residents.

Having outlined investment by non-residents, we turn now to the question of why non-residents invest in the Canadian money market.

2. Reasons for Investment in the Canadian Money Market by Non-Residents

Non-residents invest in the Canadian money market for two reasons: diversification of currencies, and additional return to be obtained in comparison to similar instruments in their countries. In theory, investment should continue until the additional return disappears (theory of interest arbitrage between various domestic markets).

As already noted, investment in Government of Canada Treasury bills is mainly undertaken by countries other than the United States. It appears that the larger part of this investment is not covered in the forward market, and one would thus conclude that this investment is made for currency diversification purposes. By diversifying his assets among various currencies, the non-resident minimizes the total exchange rate fluctuation risk of his portfolio. It remains the case that the non-resident investor could increase his yield if he were to invest in short-term instruments, also denominated in Canadian dollars but having higher yield and only marginally greater risk. But here the market segmentation theory is helpful in explaining why investment may be inelastic with respect to yield, and directed instead towards a chosen segment of Canadian instruments. Because of institutional or regulatory

TABLE 1. CANADIAN MONEY MARKET: TOTAL OUTSTANDING AND NON-RESIDENT HOLDINGS 1963-1979

	Total[1]	Held[2] by Non-residents	% held by Non-residents
		($000)	(%)
1963	1,481	349	23
1964	1,690	518	31
1965	1,315	378	29
1966	1,487	366	25
1967	1,543	319	21
1968	2,006	235	12
1969	3,138	471	15
1970	3,479	687	20
1971	3,696	698	19
1972	4,000	570	14
1973	4,682	537	11
1974	7,525	874	12
1975	8,457	1,267	15
1976	10,267	2,186	21
1977	12,229	2,648	22
1978	15,678	2,694	17
1979	19,311	3,218	17

Sources: [1] Bank of Canada Review
[2] Statistics Canada, Balance of Payments Division.

TABLE 2. VOLUME OF TRANSACTIONS WITH NON-RESIDENTS 1963-1979

	Sales	Purchases	Total
		($000)	
1963	858	815	1,673
1964	1,264	1,095	2,359
1965	1,105	1,245	2,350
1966	1,846	1,850	3,796
1967	1,510	1,557	3,067
1968	1,006	1,090	2,096
1969	3,358	3,120	6,478
1970	4,937	4,718	9,655
1971	4,315	4,804	8,619
1972	4,867	4,994	9,861
1973	9,503	9,537	19,040
1974	7,916	7,582	15,498
1975	7,878	7,483	15,361
1976	10,108	9,183	19,287
1977	13,872	13,438	27,310
1978	19,981	19,967	39,948
1979	24,391	23,874	48,265

Source: Statistics Canada, Balance of Payments Division.

constraints of the home country, it is possible that the non-resident is obliged to limit his investment in instruments issued by foreign governments. Finally, it is probable that even in the absence of these barriers, the investor would still invest in these lower-yield instruments because of a perception of capital risk. If this is the case, one will have to wait some time until experience and a fuller knowledge of markets finally lead the investor to choose Canadian dollar instruments with higher yields.

The majority of investors, however, invest funds in Canada because of the higher yields which can be obtained. As the bulk of such investment is undertaken by United States investors, the theory of interest arbitrage will be set out in terms of Canada/United States transactions. According to this theory, for similar instruments there is an interdependence between short-term interest rates in Canada and the United States, and between the spot and forward exchange rates between the Canadian and United States dollar. The theory implies that, in the absence of market imperfections, equilibrium among interest rates on the various domestic markets will occur when the rates are effectively at the same levels, with adjustment occurring through the exchange rate or through interest rates themselves. Although sometimes interpreted differently, the theory is not about cause and effect relationships, but rather limits itself to asserting that the existence of differences in effective rates of interest in different markets will set in motion a process of adjustment which will re-establish effective equality. To understand the entire theory it is useful to follow a step-by-step approach, considering first a simplified case under restrictive assumptions, and then considering more complex cases.

Assuming a constant exchange rate between Canada and the United States (i.e. equality of the spot and forward rates), and the absence of any perception of sovereign risk (i.e. risk associated with investment in another country), the theory asserts that interest rates in Canada and the United States will be the same. Given the size of United States financial markets relative to Canadian markets, it is certain that conditions prevailing in the United States will dominate the overall market. Any change in one segment of the market will result in movements of arbitrage capital which will re-establish uniformity of the two markets. This assertion is indeed verified; there is uniformity in the rates prevailing on the same type of instrument in a single country in the absence of legal barriers. However, sovereign risk and other imperfections cannot be ignored, as evidenced by the difference between euro-currency and domestic interest rates. The parallelism which exists between changes in these rates shows, however, that the two markets are closely integrated with the influence flowing largely from the domestic market to the euro-dollar market. All this amounts to saying that if a resident wishes to borrow in United States dollars, he will have to accept the conditions in the euro-dollar market, which are in turn determined by conditions in the United States market.

Assume now that the spot value of the Canadian dollar in United States dollars differs from the forward value because of expectations as to the trend of the exchange rate and suppose further that these expectations are fully reflected in a premium or discount in the forward rate. According to the theory, in equilibrium the interest rate differential between the United States and Canada will be exactly equal to the premium or discount prevailing in the forward market. Thus, if United States rates increase, not only will non-residents fail to roll over their investments in the Canadian market, but resident investors will also be drawn to the United States market. These capital outflows will give rise to an increase in Canadian interest rates as the Bank of Canada will purchase Canadian dollars (reducing liquidity in the market for Canadian dollars) and as the supply of credit will be reduced by the capital outflow. There will also be downward pressure on the spot value of the Canadian dollar and upward pressure on the forward value, with the impact being generally larger on the forward rate due to the relatively smaller volume of transactions in this market.

The final restrictive assumption, that expectations are fully reflected in the forward market, may now be removed. There are many reasons why the expected value of the Canadian dollar may change, the most common having to do with energy, foreign trade, inflation, political changes, federal government policies and, last but not least, changes in the interest differential vis-a-vis the United States. Whatever the underlying explanation for a change, the change will cause speculative flows of capital which will affect the spot and forward rates for the Canadian dollar, tending to re-establish consistency between the expected value of the dollar and its forward rate. For example, following an increase in United States interest rates, speculators will expect a fall in the value of the Canadian dollar and will influence the market by buying United States dollars on a spot or forward basis. The forward market [1] is generally preferred by speculators as the funds required are very small. In addition, the actions of speculators will be supplemented by the similar actions of firms which, in the face of expectations of a fall in the Canadian dollar, speed up the settling of accounts payable in United States dollars and delay settlements of accounts receivable in U.S. dollars. These speculative flows on the exchange market, caused by changes in expectations, will affect the spot and forward rates for the Canadian dollar, giving rise to new conditions for interest arbitrage which in turn will lead to flows of arbitrage capital.

In sum, parallel movements in Canadian and United States interest rates are the result: of arbitrage capital flows which continue until interest differentials between the two countries equal the prevailing premium or discount on the Canadian dollar forward rate, of speculative capital flows which ensure that the forward rates reflect expectations as to the value of the Canadian dollar; and finally of expectations that the exchange rate of the Canadian dollar will equilibrate the differentials in interest rates.

While the facts provide some corroboration of the theory of interest arbitrage, in that differentials in United States and Canadian interest rates are strongly linked to the spot and forward exchange rates, it is also the case that the relation is not in full accord with what the theory would suggest.

There are market imperfections, such as transaction costs, the multiplicity of interest rates, the thinness of certain markets, legal complications in the markets such as withholding taxes, lack of knowledge of market opportunities, and finally the risk associated with investment in a country other than one's own (sovereign risk).

Historically, conditions have favoured non-resident investment in the Canadian money market. In general, Canadian borrowers have borrowed in Canadian dollars and non-resident investors have looked after the details of arbitrage. But this is not always the case; often the borrower directly seeks out non-resident investors with foreign currency funds and undertakes the arbitrage operation himself.

A typical example of this type of behaviour is provided by money market brokers. They regularly need to finance inventory on a short-term basis, and frequently use the sight money market providing certain financial assets from their inventory as security (sale with repurchase clause). If conditions are appropriate, brokers can obtain funds denominated in foreign currencies from non-resident banks in the same manner, and then convert their funds in the exchange markets (spot and forward). In fact, a substantial volume of this arbitrage activity between the United States and Canada occurs on Friday for the weekend period, the brokers taking advantage of reduced rates prevailing on "clearing house funds" on Fridays. If lower rates apply on such funds than on sight loans in Canada, the broker will choose this source for weekend financing.

For example, assume the following conditions:
Interest rate on sight loans in Canada: 10% (365 days)
Interest rate on Friday clearing house funds in the U.S.: 2% (360 days)
Spot rate on U.S. dollar: 115.00 cents Canadian
3-day rate on U.S. dollar: 115.05 cents Canadian

The Canadian borrower will make the following calculations:

(1) Cost of borrowing in the United States
Amount borrowed: U.S. $1,000,000
Interest cost:

$$\text{U.S. } \$1{,}000{,}000 \times \frac{2}{100} \times \frac{3 \text{ days}}{360 \text{ days}} = \$167$$

Amount plus interest: U.S. $1,000,167.

(2) Cost in Canadian dollars
Amount available on Friday: U.S. $1,000,000 × 1.1500 = $1,150,000
Amount plus interest on Monday: U.S. $1,000,167 × 1.1505 = $1,150,692
Interest cost: $1,150,692 − $1,150,000 = $692

(3) Calculation of effective interest rate

$$\frac{692 \times 100 \times 165}{1{,}150{,}000 \times 3} = 7.32\%$$

(4) Compare with Canadian rate of 10% ∴ more profitable to borrow in U.S.

This weekend financing phenomenon can, in certain periods, give rise to large flows of funds which are not generally reflected in the statistics as the movements net out over time.

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[1] Forward market transactions may be carried out through the chartered banks or through the organized currency futures market based in Chicago.

Conclusion:

To this point, it has been seen that non-residents play an important role in the Canadian money market, investing in the market either because of the currency diversification which the market provides, or because of the extra yield obtainable relative to comparable instruments in their domestic market. Now we must analyse how these flows of capital relate to the overall balance of payments, and in particular whether they are stabilizing or destabilizing.

Short-term capital flows can play a stabilizing role with respect to the exchange rate and thus lessen the need for recourse to use of currency reserves in order to stabilize the exchange rate. In the absence of intervention in financial markets, a net excess demand for U.S. dollars (caused by a deficit in the current account) results in a depreciation of the Canadian dollar, thus modifying the conditions for arbitrage between the United States and Canada in such a way as generally to attract flows of capital (arbitrage and speculative) into Canada and to reduce the downward pressure on the Canadian dollar. But it can also happen that a net excess demand for foreign currency may be interpreted as an indicator of a larger depreciation to come, resulting in downward pressure on the Canadian dollar not only in the spot market but also in the forward market, thus completely reversing the arbitrage conditions and encouraging an outflow to the United States. These flows, far from stabilizing the exchange rate, will cause additional pressures on the Canadian dollar.

If the authorities intervene in the exchange market, a net excess demand for foreign currency will not be reflected solely on the exchange market. Unless the authorities sterilize their intervention in financial markets, the purchase of Canadian dollars will cause a reduction in Canadian liquidity, which in turn will result in an increase in Canadian interest rates and a change in the arbitrage conditions so as to encourage investment in Canada. If, on the other hand, the net excess demand is perceived to be a continuing phenomenon, it will produce downward pressure on the spot and forward values of the Canadian dollar, which could reverse arbitrage investment in spite of the automatic increase in Canadian short-term interest rates. If the authorities wish to stabilize the Canadian dollar under these conditions, they will have to tighten conditions by implementing a high interest policy in order to re-establish arbitrage relations favourable to Canada.

During the last several years the Canadian authorities have not only had to deal with a net excess demand for United States dollars resulting from the continuing deficit in the current account, they have also had to defend against continuous increases in United States interest rates. They have reacted by raising the structure of Canadian interest rates in a parallel way, not only to preserve the inflow of arbitrage capital, but also to avoid adverse expectations as to the Canadian dollar which could cause outflows of speculative capital and thus additional downward pressure on the Canadian dollar.

In sum, there are market mechanisms which act in such a way that a decrease in the value of the Canadian dollar creates arbitrage conditions which encourage inflows of capital, thus helping to limit the downward pressures. Under conditions of continuing downward pressure, as result from continuous current account deficits, the situation is less clear since speculative outflows of capital can modify the arbitrage conditions in such a way as to encourage outflows of arbitrage capital and cause additional pressure on the Canadian dollar. Such flows would in fact be destabilizing.

TABLE 3 CANADIAN MONEY MARKET INSTRUMENTS HELD BY NON-RESIDENTS — TOTAL AND PERCENTAGE COMPOSITION 1963-1979

	Finance paper		Commercial paper[1]		Other financial instruments		Government of Canada Treasury Bills		Bills of other levels of government		Total	
	($000)	%	($000)	%	($000)	%	($000)	%	($000)	%	($000)	%
1963	282	35	28	11	-		39	9	-		349	23
1964	478	42	17	8	-		23	7	-		518	31
1965	316	34	2	1	-		35	23	25[2]		378	29
1966	315	31	18	6	-		20	12	13[2]		366	25
1967	251	25	7	2	-		24	15	37[2]		319	21
1968	119	9	9	3	-		72	36	35[2]		235	12
1969	296	19	49	8	-		92	34	34[2]		471	15
1970	499	35	120	12	-		13	5	55	11	687	20
1971	460	32	161	12	-		10	6	67	13	698	19
1972	410	23	47	4	-		31	16	82	14	570	14
1973	388	16	44	5	4	1	7	7	94	17	537	11
1974	526	18	58	2	127	8	85	36	78	17	874	12
1975	697	23	93	4	233	15	127	22	127	16	1,267	15
1976	712	22	384	13	432	20	562	39	96	17	2,186	21
1977	755	23	341	12	683	23	804	30	64	14	2,648	22
1978	867	22	146	5	830	18	750	20	60	17	2,683	17
1979	1,029	26	290	6	1,224	20	567	14	108	21	3,218	17

[1] Includes bankers acceptances of Canadian banks
[2] Includes bearer notes of Canadian banks
Source: Statistics Canada, Balance of Payments Division

TABLE 4. CANADIAN MONEY MARKET INSTRUMENTS HELD BY NON-RESIDENTS — PERCENTAGE HELD BY UNITED STATES RESIDENTS 1963-1979

	Finance paper	Commercial paper[1]	Other financial instruments	Government of Canada Treasury Bills	Bills of other levels of government	Total
1963	100	100	N/A	33	-	92
1964	99	100	N/A	13	-	96
1965	85	100	-	29	52	78
1966	75	39	-	45	92	72
1967	67	57	-	21	51	62
1968	89	44	-	2	86	61
1969	100	82	-	5	91	80
1970	85	97	100	7	95	87
1971	100	95	100	1	100	97
1972	100	83	100	-	100	93
1973	100	93	100	25	100	98
1974	100	88	100	13	51	84
1975	100	87	96	10	80	88
1976	100	100	94	7	48	72
1977	100	93	94	23	83	73
1978	98	72	94	25	97	75
1979	100	93	91	28	100	83

[1] Includes bankers acceptances of Canadian banks
N/A Not available
Source: Statistics Canada, Balance of Payments Division

Bibliography

Atkin, John — Keeping track of short-term interest rates, *The Banker*, Janvier 1980.

Barron Stephens Inc., *The Canadian Exchange and Money Market*.

Cohen, B.J. — *Balance of Payments Policy*, Penguin modern economics, 1969, 166 pages.

Dufey, G. and Giddy, H., *The International Money Market*, Prentice Hall, 1978.

Grubel, H.G., *The International Monetary System*, Penguin modern economics, 1969, 208 pages.

Statistics Canada, *Quarterly Estimates of Canadian International Balance of Payments*, Catalogue 67-001, quarterly

Stigum, Marcia, *The Money Market*, Dow Jones Irwin, 1978, 578 pages. ■